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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 715

Contribution from the Bureau of Biological Survey,
E. W. NELSON, Chief.

Washington, D. C. August 12, 1918

ATTRACTING BIRDS TO PUBLIC AND SEMIPUBLIC RESERVATIONS.

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The popular motive for attracting birds is esthetic enjoyment. The sprightly activity of birds, their beauty of form and color, and their interesting and often charming notes have a wide appeal. Thousands of persons, therefore, have taken steps to increase the number of birds upon their own property.[1] While less has been done by concerted public effort, still a beginning has been made. Any campaign of this kind must take into account the economic as well as the esthetic results of bird attraction and protection. Birds are beneficial as enemies of a great variety of pests, and it is claimed by several observers that an abundance of birds on their grounds has kept in subjection all the ordinary enemies of trees, shrubbery, and herbage. At all events, birds exert a steady influence in reducing the numbers of injurious plant feeders and should be particularly useful in public reservations, where beauty and utility so largely depend upon preserving the vegetation.

[1] Information on attracting birds is contained in the following Farmers' Bulletins: 621, relating to the Northeastern States; 760, to the Northwestern States; 844, to the Middle Atlantic States; and 912, to the East Central States.

NOTE.—For general distribution among organizations and individuals interested in the protection of wild birds. Of especial value to those in charge of parks, cemeteries, and other public and semipublic reservations.

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The classes of public reservations upon which more attention might well be paid to attracting birds include the national parks, monuments, and forests; national bird reservations and game refuges; and State and municipal parks, including, when spacious enough, those surrounding public buildings, botanical and zoological gardens, the environs of reservoirs and waterworks, and parkways, boulevards, and roadsides.

Among semipublic reservations upon which bird-attraction methods could be profitably applied are the grounds of colleges and other schools, cemeteries, fair grounds, and the right of ways and other parked areas of transportation lines.

NATIONAL RESERVATIONS.

The Federal Government has wisely set aside various tracts of public land, either to preserve areas of great scenic or ethnologic interest, or to assist in the perpetuation of such natural resources as forests, game animals, and birds. The primary purpose of these reservations, to preserve objects of great interest, may well be supplemented by an attempt to increase within safe limits their natural attractions, among which are birds.

On the national parks and monuments, which are great public recreation grounds, birds may well be increased, because of their strong appeal to many tourists. In the Yosemite National Park much has already been done in the way of erecting bird houses and planting fruit-bearing shrubs, especially near the main thoroughfares. The methods that may be followed are those described in the Farmers' Bulletins cited in the footnote on page 1, and in No. 609, entitled Bird Houses and How to Build Them.

The objects of the national forests are primarily utilitarian, and they will certainly be furthered by an increase in the number of birds. Great efforts are now directed toward reducing rodent pests in national forests, as a measure of protection not only to the forests, but also to crops on adjoining lands. Upon the same principle, an increase in useful birds within the forests will have a beneficial influence throughout the environs of these reservations. The methods recommended for this purpose are those mentioned in the preceding paragraph.

On the national bird reservations and game refuges, which have been established for the precise purpose of preserving and increasing wild life, the use of bird-attraction methods should be an essential part of the administration. To make these places more attractive to birds in general and to benefit the smaller birds directly, the measures already referred to should be used. The problem of better fitting the reservations for other birds may be treated as dual, involv-

ing catering to, and thus increasing the numbers of, waterfowl, and, with the same objects in view, improving suitable ranges for upland game birds.[1]

ATTRACTING WATERFOWL.

The chief attraction for our most important waterfowl, the ducks and geese, is a copious supply of food, furnished by aquatic and semi-aquatic plants. Since these plants are the basic source of food of small animals, as insects, crustaceans, and fishes, upon which ducks and geese as well as other waterfowl feed, it is evident that increasing the vegetable food resources of wild ducks and geese also improves living conditions for all the other feathered inhabitants of marshes and lakes.

The vegetable food of wild fowl is derived from a great variety of plants. An important part of it consists of the tubers, seeds, and foliage of submerged water plants of the groups of pondweeds, musk grasses, wild celery, widgeon-grass, coontail, and milfoils. The plants which at least in part float upon the surface, including the waterlilies, duckweeds, water primroses, water pennyworts, and frogbit, also supply much wild-duck food. Semisubmerged plants of value comprise a long series of bur-reeds, arrowheads, smartweeds, and other plants, as thalia, pickerel weed, and watercress, together with all the marsh grasses and sedges, among which are some of the most important species, as wild rice, wild millet, cord and switch grasses, meadow grass, and bulrushes. A similar and valuable duck-food plant suited to drier ground is chufa, but a large number of shore plants of entirely different character produce large quantities of food for waterfowl. These are mast and fruit-producing shrubs and trees which grow in shallows or on the margins of bodies of water. Among them may be especially mentioned buttonbush, water elm, water privet, swamp holly, cypress, hackberries, oaks, hickories, ashes, red haws, and grapes.

Cover plants which furnish concealment for nests, as well as for the birds themselves in time of need, are almost as important to wild fowl as food. Fortunately, many plants furnish both food and cover, the most valuable being the bulrushes and such marsh grasses as reed, salt, cord, and switch grasses.

Furnishing waterfowl resorts with as complete as possible an assortment of the plants named is certain to result in an increased number of birds frequenting them. Methods of propagating most of these species are described in two bulletins of the United States Department of Agriculture: No. 205, Eleven Important Wild-Duck Foods; and No. 465, Propagation of Wild-Duck Foods.

[1] Where local conditions warrant, these projects should receive attention also in national parks and forests.

IMPROVING COVERTS FOR UPLAND GAME BIRDS.

The favorite resorts of upland game fowl have long been known as coverts, no doubt on account of their being admirably adapted to covering or concealing the birds. Such coverts are usually characterized by an abundance of low but dense and stiff or thorny shrubbery, together with luxuriant growths of grasses and weeds. These plants supply also an important part of the food of grouse and quail; and adding goodly stocks of them to suitable areas in our national reservations will do much to preserve and increase the upland game.

Bob-whites frequently use coverts of rose, alder, and blackberry bushes, and also thickly set barberry and bayberry and dense banks

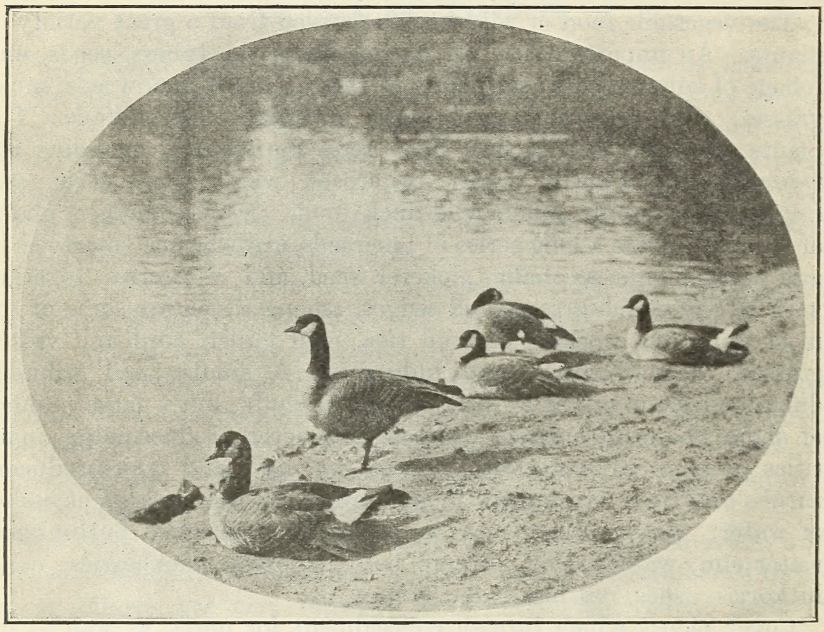

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Fig. 1.—Wild geese in Golden Gate Park, San Francisco, Cal.

of honeysuckle. These plants furnish food for the birds, but they should be supplemented by others more exclusively adapted for this purpose. Sumach, Japanese clover, buckwheat, sorghum, millet, vetches, cowpeas, and any plants of the pea family producing small seeds are valuable and should be sown in large quantities. The seeds of milk pea (*Galactia*), partridge pea (*Chamæchrista*), hog peanut (*Falcata*), wild bean (*Strophostyles*), and smartweeds (*Polygonum*) are important natural foods of the eastern quail, but should be encouraged only where they can not become weed pests. Western quail are fond of the seeds of sumach, bur clover, alfilaria, lupines, napa thistle, and turkey mullein plants; but where these

plants are liable to become nuisances the food plants recommended for the eastern quail will serve.

Coverts for grouse, as the sharp-tailed, should abound in such plants as rose, sumach, blueberry, bearberry, buffaloberry, dwarf birch, and alder. The ruffed grouse thrives among scrub oak, bayberry, rose, sumach, dwarf birch, alder, poplar, willow, and such fruit-bearing plants as partridge berry, hawthorn, viburnum, wild grapes, mountain ash, blueberry, blackberry, and cranberry. Cover of this nature is suited to the heath hen also and to the imported pheasants and the Hungarian partridge, but in all cases it is well to supplement the food supply furnished by these shrubs and trees by planting small grains and legumes as recommended for quail.

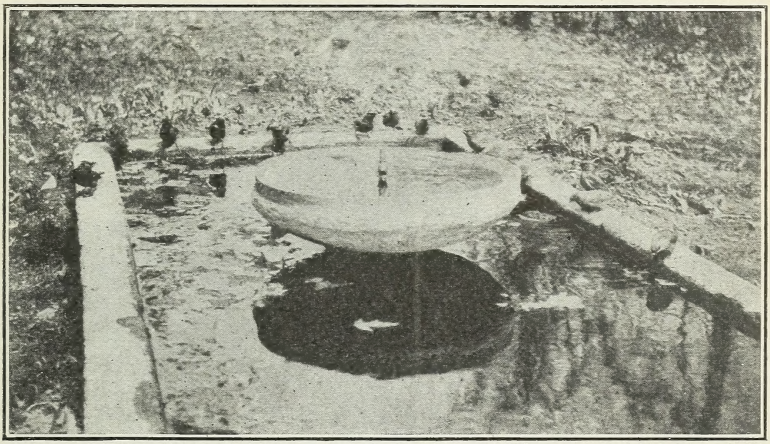

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Fig. 2.—Cedar waxwings at a bird fountain.

STATE, MUNICIPAL, AND OTHER PARKS.

Parks adorn public places and educate and recreate the people. They may be improved for all these purposes by increasing their bird population. Moreover, the alterations that need be made to improve a park as a bird haven may, and should, themselves be made to add to its attractiveness. For instance, water is used to enhance the beauty of most parks, and a water supply is one of the most potent attractions for birds (fig. 1). Bird baths (figs. 2 and 3) or fountains may take the form of small displays of water, which may be added to many parks without being obtrusive or conflicting with the general design.

An artistic martin-house well placed in one of the small open lawns that most large parks contain (fig. 4), would not only increase the beauty and interest of the place, but would add to its dignity by suggesting a specific usefulness for the space. As for nest boxes

for other birds, they may be so inconspicuously placed that the chief evidence of their presence would be the increased number of birds, and decreased injury to vegetation by insect pests. The perfection of specimen trees in parks and the work of the tree surgeon on imperfect trees make it necessary to supply nest boxes if the hole-nesting birds are to have any chance of inhabiting parks.

Feeding stations for birds are made in a number of sightly designs, and the principles upon which they are built allow of their being extensively varied or incorporated into other park structures. The greatest usefulness of feeding stations in parks, aside from the preservation of birds, is in rendering the parks more attractive to the public in winter. The feeding of birds is carried on with most obvious results

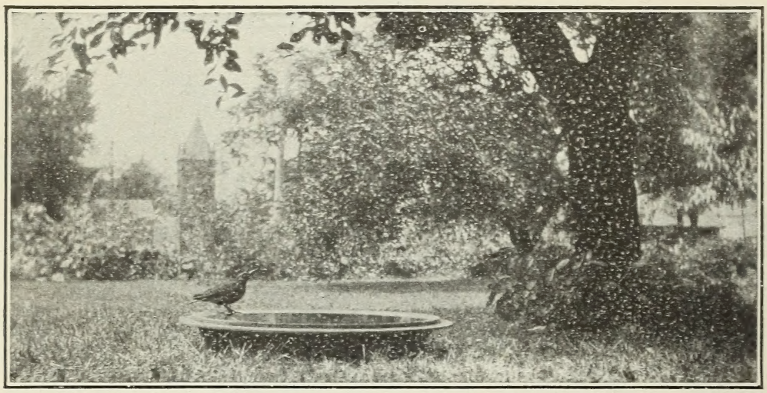

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Fig. 3.—Flicker at a bird fountain.

during the colder months, and adding this feature to parks appeals strongly to thousands of lovers of nature.

By means of feeding stations it is possible to attract to convenient observation points several species of the most interesting and valuable birds. Such stations are particularly pleasing to children. As evidence of the value of the method, the following statement of experience by Theodore Wirth, Superintendent of Parks, Minneapolis, Minn., is presented:

> For the past five or six years we have maintained a number of feeding stations in various parts of our park system, with very satisfactory results. I give you a list of the birds which stay with us over winter. The permanent winter-birds found in the vicinity of our parks are the chickadee, blue jay, white-breasted nuthatch, downy and hairy woodpeckers, and screech owl; winter visitors, the redpoll, tree sparrow, and junco; irregular winter visitors, the evening grosbeak, Bohemian waxwing, and snow bunting. It is safe to say that a large number of these species are staying in the parks on account of the food supplied them. The feeding of the wild birds in the parks is a great success and will be continued.

Supplying water, nest boxes, and winter food goes far toward making a bird haven, but it is important also to supplement the summer food. This can best be done by planting fruit-bearing shrubs and trees. Shrubs and trees are essential elements of park composition, but according to the judgment of bird lovers better choice than is often made is distinctly possible.

The guiding principle in park planning should be beauty, but it should not be a temporary or one-seasonal beauty. Hence it follows that shrubs and trees which produce colored fruits, and retain them for long periods, are preferable to plants whose chief decorative contribution is a short burst of bloom. Such shrubs are handsomer at all times after flowering and are particularly valuable in winter

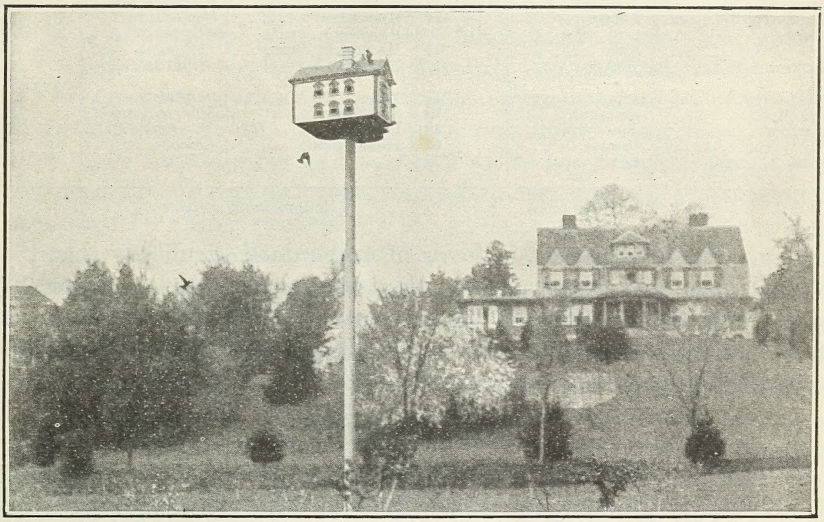

Fig. 4.—Martin house in parklike surroundings. B1106M

when every bit of color in the landscape is precious. They are valuable moreover in supplying bird food. The kinds preferred by birds are shown in Table I (p. 8), and the species most suitable for various sections of the country are listed in the Farmers' Bulletins mentioned in the footnote on page 1.

A few further suggestions as to the use of fruit-producing plants are not out of place. The ideal American park is natural woodland, modified and embellished, or a planting that follows natural lines. Informal treatment is almost universally preferred to formal. From the standpoint of bird attraction this is fortunate, since clipping shrubs either prevents or reduces the production of fruit and causes the plants to form such solid and dense surfaces that they are uninviting to birds.

TABLE I.—*Preferences of birds among genera of fleshy fruits.*

Common name.	Scientific name.	Number of species of birds known to eat the fruit.[1]	Common name.	Scientific name.	Number of species of birds known to eat the fruit.[1]
Juniper; red cedar	*Juniperus*	36	Pepperberry	*Schinus*	10
Greenbrier	*Smilax*	38	Holly	*Ilex*	38
Bayberry	*Myrica*	64	Supple-jack	*Berchemia*	12
Hackberry	*Celtis*	38	Buckthorn	*Rhamnus*	16
Mulberry	*Morus*	52	Grape	*Vitis*	71
Pokeberry	*Phytolacca*	48	Virginia creeper	*Parthenocissus*	39
Barberry	*Berberis*	10	Buffaloberry	*Shepherdia*	13
Spicebush	*Benzoin*	17	Wild sarsaparilla	*Aralia*	14
Sassafras	*Sassafras*	15	Dogwood	*Cornus*	79
Currant; gooseberry	*Ribes*	30	Sour gum	*Nyssa*	36
Strawberry	*Fragaria*	42	Bearberry	*Arctostaphylos*	12
Raspberry; blackberry.	*Rubus*	114	Huckleberry	*Gaylussacia*	30
			Blueberry	*Vaccinium*	62
Rose	*Rosa*	17	Mexican mulberry	*Callicarpa*	10
Mountain ash	*Sorbus*	14	Partridge berry	*Mitchella*	10
Chokeberry	*Aronia*	13	Elder	*Sambucus*	101
Red haw	*Crataegus*	30	Snowberry	*Symphoricarpos*	22
Juneberry	*Amelanchier*	38	Black haw	*Viburnum*	26
Cherry; plum	*Prunus*	66	Honeysuckle	*Lonicera*	15
Sumac[2]	*Rhus*	76			

[1] When 10 or more. [2] Nonpoisonous species.

It may further be said in favor of untrimmed shrubbery that the normal form and beauty of the plants, together with the resultant play of light and motion, are preserved. With this treatment a park has naturalness and life; under formal treatment the suggestions are those of restraint and immobility.

ZOOLOGICAL GARDENS.

If bird-attracting devices are a desirable addition to the resources of ordinary parks, they are a positive necessity in zoological gardens. Is not an abundance of native birds, giving opportunity for observation under natural conditions, preferable to a display of the same species in cages? Whenever a species can thus be put on exhibition in the wild state, it should be done. Bird fountains, nest boxes, and feeding stations are the devices which make the achievement possible.

BOTANICAL GARDENS.

Bird attraction may well be cultivated also in botanical gardens. The presence of numerous birds will not only make the park more entertaining to visitors, but will also result in decreased trouble from injurious insects. When spacious, the grounds surrounding all kinds of public buildings are available for bird-attraction centers, and should receive similar treatment to parks. Fair grounds also may be mentioned here; much effort usually is made to beautify them, and part of it could well be in a form beneficial to birds.

PARKWAYS, BOULEVARDS, AND ROADSIDES.

There exists in most parts of the United States either a superstition, a conviction, or a legal requirement that roadsides be shorn of their vegetation at least once a year. The result is that most country roads are very uninviting in summer. Hot and gray with dust, the highway stretches away before the traveler, often without a single tree to break the monotony of the view or afford relief from the rays of the sun. This baldness is brought about chiefly by two causes: (1) Fear that the roadside will unduly increase weeds and insect and rodent pests, and (2) lack of public spirit.

Fortunately, we have in this country examples of well-kept parkways and boulevards which border cultivated lands. Their ample parking is grown to grass and embellished with herbaceous flowers, shrubs, and trees. Yet the farm lands they border are neither overwhelmed by weeds nor devastated by insects and rodents.

The question of roadsides propagating vast numbers of noxious weeds may be viewed in more than one light. For instance, the mowing of waysides for long series of years has not done away with the need of cultivating crops; indeed it can not, for cultivation is necessary for other reasons (as loosening, aeration, and water conservation) than the destruction of weeds. Furthermore, the amount of cultivation customarily given crops is sufficient to control all the weeds the land will grow, and this number is generally present despite the razing of roadside growths. On the other hand, the lack of verdure and shade and the general dreariness of roadsides make it very desirable that a different treatment of these most extensive public parkings be adopted. Placing vines upon fences and planting numerous shrubs and shade trees[1] along the way will not only render the roads more attractive but will tend to keep down the dust.

So far as the effect upon birds is concerned, there can be no doubt that suppression of roadside vegetation is a potent factor in restricting their numbers. The same can be said of fence rows, which to an ever increasing degree are made to occupy the minimum of space; farmers may gain a planting row about every field by the destruction of vegetation along fences, but they lose the services of the birds, their best allies in fighting insects. Shrubby fence rows are among the best harbors and nesting places of small birds, and it is certain that encouraging an abundance of birds to live on farms is a profitable policy. It is greatly to be desired, therefore, that more be done to beautify roadsides and fence rows, not only as a measure to contribute to the comfort and pleasure of man but also substantially to increase a great economic asset—the bird population of the country.

[1] In plantings of this nature, it will be well to omit the common barberry, which serves as an alternate host for wheat rust; and wild cherry, which is so favorable a nursery for tent caterpillars.

RESERVOIRS.

The grounds surrounding reservoirs of drinking water usually are well fenced and carefully guarded to minimize contamination. This results in freedom from disturbance, a boon so highly appreciated by birds that in itself it goes far toward making these places satisfactory bird havens. Such reservations can be greatly improved for this purpose, however, by the use of bird houses and proper planting, measures which will be in no way deleterious to the water supply, but which will greatly benefit the birds, and through them the vegetation of the reserve and adjacent country.

Reservoirs for other than drinking water usually can be sown to aquatic plants, thus making them attractive to many water birds. The character of the planting will depend on circumstances; if a marshy margin is permissible, the place may be made into an excellent resort for wild fowl. If only submerged plants are desired and as clean a growth as possible, sago pondweed may be planted. Broader-leaved plants furnish much greater surface for lodgment of silt and growth of algæ. The methods of propagating a variety of aquatic plants are described in Department Bulletins 205 and 465.

COLLEGE AND OTHER SCHOOL GROUNDS.

The campus, like the park, has suffered from formal landscape gardening. Wall-like hedges, closely cropped circles, or triangles of shrubs, and mathematically designed edgings, beds, and gardens have gone far toward robbing school grounds of merit in the eyes of man, and have almost spoiled them for birds.

All of the arguments made in connection with parks show also the desirability of taking birds into consideration in campus planning. There is in addition the very important objective of keeping up an important educational resource. There is hardly an advanced school in the country that does not offer one or more courses of bird study. The study of birds out-of-doors is essential to a good bird course, and this need should be kept in view by those in charge of college and school grounds. Sylvan campuses where formerly birds abounded have been so filled with buildings, so gardened and formalized, that birds are now scarce. If possible, some corner (preferably of original woodland, where that exists) should be allowed to run wild. Judicious addition of food-producing plants should be made there, and the campus in general improved for birds by allowing shrubs to make natural growths. Putting up nest boxes would make up for the hole-eliminating activities of the tree surgeon. Winter feeding would be very interesting and instructive to many students and could be carried on as part of the course of bird-study classes. Finally, the teacher of ornithology might well

have an advisory capacity in relation to the planning and treatment of the campus.

CEMETERIES.

Cemeteries have the reputation of being good places for birds. The reasons, one must infer, are seclusion, freedom from disturbance, and an abundance of trees and shrubs. The last-named factor is by no means least, nor on the other hand is it so perfect as not to be susceptible of improvement. Selection of shrubs and trees with the needs of birds in mind would not interfere with the general plan of a cemetery, but would make it a still better resort for birds.

Formal landscape gardening is more prevalent (perhaps excusably so) in cemeteries than in other public reservations, yet there are very beautiful cemeteries in which formal composition plays little part. Here, as everywhere, the informal or naturalistic planting is most favorable to birds. Nest boxes can be added without being obtrusive, and bird fountains may be made to harmonize with the surroundings or even to serve as memorials.

The movement to convert cemeteries into bird sanctuaries and to improve them for the purpose is already well under way and is being fostered by the National Association of Audubon Societies. A pioneer in this work, H. S. Mann, secretary of the Forest Lawn Cemetery Association of Omaha, Nebr., reports:

> We have been very successful in attracting birds to Forest Lawn Cemetery. The cemetery contains 320 acres, all fenced, and is located north of the city limits of greater Omaha. It has an abundance of trees and shrubbery, about 250 acres of the half section being unimproved at this time. A creek runs through the southern portion of the cemetery and east and north of it are great stretches of wild lands.
>
> Bird houses, feeding stations, and baths have been erected in the cemetery. Quantities of tangled underbrush and small fruit-bearing bushes and vines have been set out and preserved for the birds. With these attractions, free from annoyance of cats, hunters, and children at play, it is a paradise for birds.
>
> Bird students visit the cemetery frequently, as a larger number and a greater variety of birds may be found within its sacred enclosures than anywhere else in this section of the country, excepting perhaps the great Fontenelle Forest Reserve of 400 acres on the Missouri River adjoining the city on the south.

RIGHT OF WAYS.

A number of railroad companies have already made considerable effort to beautify their right of ways and station grounds. In some places the roads are paralleled for many miles by hedges, and the land on either side of the tracks is covered by beautiful turf. About the stations, hedges, shrubbery, and flower beds are common. If this planting could be aimed in part, at least, toward attracting birds it would be very effective and great good would be done. If the clumps of shrubs were formed of kinds furnishing bird food (see Table I), if more of them were placed along the right of ways, if the

hedges were allowed to bear fruit, and if the fence poles or possibly even some of the telegraph poles bore bird houses, thousands of birds could live where very few do now.

The suggestions made are by no means without practical value to the right of way itself. For instance, supplying bird boxes is the best method of preventing damage to poles by woodpeckers, which come anyway under present conditions and make their own homes. Hedges or fences densely covered with vines would decrease, if not entirely obviate, expenditures for the movable snow fences now extensively used.

The project of increasing the number of birds along the right of ways should interest the agricultural development bureaus of railroads. The small birds that are most easily encouraged when shrubbery, nest boxes, and water supply are provided, are chiefly beneficial. Increasing their numbers would result in great destruction of insects on adjacent farms, a very practical bit of agricultural improvement.

CONCLUSIONS.

The use of bird-attraction methods on numerous public and semipublic reservations in the United States would result in a decided increase in the number of birds and in the usefulness of the reservations. Benefit would accrue not only to these areas but, through increased destruction of injurious insects, to all adjoining lands and the country at large. The lands are available, the methods are known, and the certainly useful results wait only upon the interest and support of the administrative authorities.

PUBLICATIONS OF THE U. S. DEPARTMENT OF AGRICULTURE RELATING TO THE PROTECTION AND ATTRACTION OF WILD BIRDS.

AVAILABLE FOR FREE DISTRIBUTION BY THE DEPARTMENT.

Eleven Important Wild-Duck Foods. (Department Bulletin 205.)
Propagation of Wild-Duck Foods. (Department Bulletin 465.)
The Duck Sickness in Utah. (Department Bulletin 672.)
Bird Houses and How to Build Them. (Farmers' Bulletin 609.)
How to Attract Birds in Northeastern United States. (Farmers' Bulletin 621.)
How to Attract Birds in Northwestern United States. (Farmers' Bulletin 760.)
How to Attract Birds in the Middle Atlantic States. (Farmers' Bulletin 844.)
How to Attract Birds in the East Central States (Pennsylvania to 100th meridian). (Farmers' Bulletin 912.)
Game Laws for 1917. This publication contains the texts of the Federal migratory-bird law; the treaty of 1916 protecting birds migrating between the United States and Canada; the Canadian migratory-birds convention act; and other matters relating to the protection of birds. (Farmers' Bulletin 910.)
The Great Plains Waterfowl Breeding Grounds and Their Protection. (Separate 723, Yearbook 1917.)

FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C.

Preliminary Census of Birds of the United States. (Department Bulletin 187.) Price, 5 cents.
Mortality Among Waterfowl Around Great Salt Lake, Utah. (Department Bulletin 217.) Price, 5 cents.
Second Annual Report of Bird Counts in the United States, with Discussion of Results. (Department Bulletin 396.) Price, 5 cents.
Our Shorebirds and Their Future. (Separate 642, Yearbook 1914.) Price, 5 cents.
Plants Useful to Attract Birds and Protect Fruit. (Separate 504, Yearbook 1909.) Price, 5 cents.
Bird Day in the Schools. (Biological Survey Circular 17.) Price, 5 cents.
National Reservations for the Protection of Wild Life. (Biological Survey Circular 87.) Price, 5 cents.

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